Attachment No. 5
Summary of Mitigation Measures

Description of Impact	Mitigation Measure
Land Use & Planning ♦ Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	**LAND USE-1**: The applicant shall provide proof to the City of Huntington Beach of either an executed title settlement agreement between the California State Lands Commission and the property owner or a letter from the California State Lands Commission indicating that no agreement is needed prior to any issuance of a demolition or grading permit by the City of Huntington Beach. The entitlements for the project shall not become effective until such documentation is submitted and confirmed by the City of Huntington Beach.
Geology & Soils ♦ Seismic-related ground failure, including liquefaction ♦ Landslides	**GEO-1**: In order to improve the in-situ strength characteristics of the subsurface soils and improve the seismic stability of the slopes by reducing potential for lateral spreading and liquefaction, one or a combination of the following mitigation alternatives shall be implemented prior to issuance of building permits. The preferred method(s) shall be documented on grading and building plans. a. Subsurface soils and slope areas shall be strengthened by the implementation of engineered in-situ soil remediation methods such as mixing cement slurry/grout into the weak soil layers to depths needed for stabilization. b. The proposed structures, including the subterranean garage, shall be supported on a system of deep foundations, such as cast-in-drilled-hole shafts, designed to pass through the potentially liquefiable zones and potentially laterally displaced zone of soil. c. Subsurface soils shall be strengthened by the installation of higher modulus columns of compacted aggregate to modify the vertical and lateral load-carrying capacity of the existing soils. **GEO-2:** In order to protect the adjacent properties, structures, and the Harbour from potential erosion or unstable soil conditions during construction, one the following shoring alternatives shall be incorporated into the project design, grading plan and building plans:

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	a. Deep Soil Mixing (DSM) to a depth of 22 feet below finish grade within a 5-foot wide area along the easterly property line, and within a 10-foot wide area along the south, west, and north sides of the property. b. Driving of sheet piles to a depth of -25 feet around the entire perimeter of the site. c. Installing rammed aggregate impact piers to a depth of -16 feet.
Hydrology & Water Quality ♦ Violate any water quality standards or waste discharge requirements ♦ Otherwise substantially degrade water quality ♦ Potentially impact stormwater runoff from construction activities ♦ Potentially impact stormwater runoff from post-construction activities ♦ Result in a potential for discharge of stormwater pollutants from areas of material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas, loading docks or other outdoor work areas	**HYDRO-1**: During all phases of the project during construction and post-construction, Best Management Practices (BMPs) shall be implemented to prevent and control untreated runoff, turbidity and implement water quality standards and waste discharge requirements. BMPs may include sandbags, detention basins, clarifiers, and silt curtain(s). The silt curtain(s) shall be continually maintained free and clear of debris, shall be properly maintained without holes, rips, or tears, and shall remain in place for the duration of the marina construction and dredging activities or until permanent BMPs are installed and operational. **HYDRO-2**: If turbidity is observed at a distance of 100 feet or greater from the actual work site, either the work shall be stopped until the water returns to normal or, if deemed necessary, a silt curtain shall be installed until turbidity returns to normal.
Biological Resources ♦ Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S, Fish and Wildlife Service	**BIO-1**: Pre-construction (within 60 days of a disturbing activity) and post-construction (30 days of cessation of the project) eelgrass surveys shall be conducted to determine the level of eelgrass loss, if any, as a result of the project activities. This survey shall be valid for 60 days unless conducted between August and October, in which case it is valid until March 1 of the following year.

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♦ Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service ♦ Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites	**BIO-2**: Prior to issuance of a Certificate of Occupancy, any loss in acreage of eelgrass habitat shall be mitigated according to State and Federal environmental policies. Mitigation may include out-of kind mitigation (suitable to the resource agencies) if the total area is less than 10 square meters, or replacement at a 1.2 to 1 ratio (for every 1 square meter of eelgrass disturbed or lost, 1.2 square meters is to be replaced) in a suitable location if the total is more than 10 square meters. In the event of replacement, subsequent success monitoring at six months, and annually beginning at one year through five years with success criteria as determined in the Southern California Eelgrass Mitigation Policy. **BIO-3**: Dredging and other turbidity generating work shall be limited to the months of November to March to minimize impacts to foraging and nesting for protected avian species. If dredging and pile driving activities cannot be timed to avoid encroachment into the least tern nesting season, the applicant shall be required to effectively contain visibly detectable surface turbidity associated with in water construction activities to the smallest footprint practicable and not more than 0.5 acre maximum during the least tern season. During construction, a qualified biologist shall conduct weekly monitoring of the silt curtain(s) and monitor water quality at a distance of no more than 10 meters outside of the silt curtain and 100 meters upcurrent of the silt curtain. Turbidity (via light transmittance) shall be measured at 1 meter above the bottom, mid-depth, and one meter below the surface both at 10 meters and 100 meters from the dredge operations. A decrease in light transmittance of more than 30% (average of the three readings) from that found 100 meter upcurrent shall result in a suspension of dredging until the cause is corrected. Additionally, dissolved oxygen concentrations (DO) and hydrogen ion concentrations (pH) shall be measured at the same depths and locations. Dredge operations shall be suspended at any time the biological oxygen demand causes concentrations of DO to be less than 5 mg/l and pH to drop below 7.5 (average of the three measurements) in the area within 10 meters of the silt curtain unless ambient condition DOs are below 5 mg/l and pH below 7.5 at the station 100 meters upcurrent. In the event that turbidity extends beyond the allowable limits, turbidity generating activities shall cease until such time as turbidity levels are brought back into compliance.

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	BIO-4: If sea lions, seals (or other marine mammals), or sea turtles are observed within 100 meters of the construction or dredging process, all in water activity shall cease until observations indicate the marine mammals or turtles have departed the work site.
Noise ♦ Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies ♦ Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels	**NOISE-1:** The Applicant shall require by contract specifications that the following construction best management practices (BMPs) be implemented by contractors to reduce construction noise levels: ▪ Notification shall be mailed to owners and occupants of all developed land uses immediately bordering or directly across the Harbour channel from the project site area providing a schedule for major construction activities that will occur through the duration of the construction period. In addition, the notification shall include the identification and contact number for a community liaison and designated construction manager that shall be available on-site during all construction activities. Contact information for the community liaison and construction manager shall be located at the construction office, City Hall, and the Police Department. ▪ Ensure that construction equipment is properly muffled according to industry standards. Shut off or run noise generating equipment and machinery on their lowest settings when not in use. ▪ Implement the best available technology throughout all construction activities in noise attenuation measures, including but not limited to sound barriers or noise blankets. If necessary, erect a temporary sound barrier at least 12 feet high (referenced to the existing project grade) along the entire length of the east property line to minimize the noise impacts for the nearest sensitive receptors. This barrier shall remain throughout the entire construction phase of the project. ▪ Ensure that all construction work that would be expected to create high noise and/or vibration levels shall be carefully scheduled to be performed in the least amount of time possible. ▪ Where feasible, all stationary equipment or localized work creating high noise levels shall be

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	surrounded by portable eight-foot high acoustical screens. ▪ All project personnel shall be made aware of the potential for noise and vibration impacts and shall practice good neighbor policies designed to minimize noise and vibration impacts at all times. **NOISE-2:** The Applicant shall require by contract specifications that construction staging areas, along with the operation of earthmoving equipment within the project site, are located as far away from vibration- and noise-sensitive sites as possible. Contract specifications shall be included in the proposed project construction documents, which shall be reviewed and approved by the City. **NOISE-3:** The applicant shall be required to submit a noise and vibration control plan to the Planning and Building Director for approval prior to the start of construction. Features that shall be included in the noise and vibration control plan are: ▪ A list of all major noise and vibration generating equipment that will be used on the site for each phase of construction. ▪ Noise and vibration predictions at each of the sensitive receptors that were indentified in the report for each phase of the construction. ▪ Locations, heights, and materials for noise barriers that may be employed and schedule for their installation. ▪ Other mitigation measures that will be used. These might include use of temporary noise barriers for stationary equipment, use of low-noise and vibration equipment or highly efficient mufflers, and alternative construction methods. **NOISE-4**: The final design of residential units shall incorporate the following building material to comply with the interior noise standards: ▪ Add STC 24 glazing to all residential units unless otherwise noted. ▪ Add STC 26 glazing to all rooms with any view of Warner Avenue and/or Pacific Coast Highway from Units 4, 5, 11, 12, and 13. ▪ Add STC 28 glazing to all rooms with any view of Warner Avenue and/or Pacific Coast Highway from

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	Units 6 and 14. ▪ Add STC 36 glazing to all rooms with any view of Warner Avenue and/or Pacific Coast Highway from Units 7 and 15. ▪ If the interior allowable noise levels are met by requiring that windows are unopenable or remain closed, the design of the structure must also specify a ventilation or air conditioning system too provide a habitable interior environment. The ventilation system must not compromise the dwelling unit's noise reduction. **NOISE-5:** Pile-driving activities shall be scheduled between the hours of 8:00 AM and 4:00 PM on Mondays through Fridays only. Piles shall be installed with jetting, predrilling, or pile cushioning to reduce the duration of pile-driving. **NOISE-6:** The applicant shall perform the following tasks: ▪ Conduct pre- and post-construction video and survey inspections of the Weatherly Bay Swimming Pool complex, Weatherly Bay tennis court, Weatherly Bay perimeter wall adjacent to the project site, and Warner Avenue Bridge. ▪ Install meters to measure and monitor vibrations. ▪ Visually monitor the above structures for damage on a daily basis, and video and survey once per week during construction. ▪ Upon evidence of structural damage to the above structures, the applicant shall cease construction operations immediately and assess, repair, and remediate any damages to the structures in accordance with the recommendations in the Preliminary Geology and Soils Report. ▪ Provide a bond in an amount determined by the City Engineer for the repair and/or replacement of structural damage to the Weatherly Bay Swimming Pool complex, Weatherly Bay tennis court, and Weatherly Bay perimeter wall adjacent to the project site. **NOISE-7:** The applicant shall perform the following tasks: ▪ Monitor ground vibrations near the wall to confirm safe operations of sheet-pile installation. Modify operations to keep vibrations within safe levels.

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	▪ Inspect the bridge and document the "as-is" condition by survey and video. ▪ During construction, continue to visually inspect the bridge and monitor changes and/or damage to the bridge by video and survey. ▪ Terminate the concrete sheet-pile wall, jet sheet piles within 16 feet of bridge and reduce energy of vibratory hammer. Prior to implementing this alternative, perform field measurements on sheet-pile installation to confirm that ground vibrations are within acceptable limits. ▪ In lieu of termination or jetting near the bridge, install a 16-foot long revetted slope between the bridge and the sheet-pile wall. ▪ Install meters to measure vibration.

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